

**CICADA TIBICEN, A SOUTH AMERICAN SPECIES,
WITH RECORDS AND DESCRIPTIONS OF
NORTH AMERICAN CICADAS.**

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***Cicada tibicen* Linn.** (Pl. V, fig. 1.)

Owing to the continued and erroneous use of this name for a North American Cicada the following facts are presented: In 1705 Maria Sibylla Merian published a work on the insects of Surinam, South America, and on plate 49 showed a cicada in the act of flying and a cicada nymph sucking a flower. The figure of the cicada has been reproduced on the plate accompanying this article from the 1719 edition of the work in the library of the American Museum of Natural History. The figure on the original plate shows an insect with the margin of all of the wings slightly yellowish or brownish yellow in color. The explanation of plate 49 is in Dutch, but the copy in the museum library has interleaved pages which bear English translations, and that referring to the cicada is as follows: "The Pomegranate which is a Tree sufficiently known all over, y^e World, grows in y^e Fields at Surinam, I observed on it a kind of Beetle, which was naturally very slow and sluggish and consequently easy to be taken; under y^e forepart of their Head, they have an oblong Probocis, which they stick into Flowers, when they suck out y^e Honey; On y^e 29th it remained without Motion, and y^e skin on y^e Back breaking of its own accord, produced green Flies with Transparent Wings, they are very common at Surinam, and Fly with Extraordinary swiftness, that it took me up several hours to Catch one of them, This Fly makes a Sound like a Lute, and may be heard a great way off by its Singing for which reason y^e Dutch call it Lierman or the Harper, it has y^e same Probosis as y^e Beetle had, and when y^e Feet Eyes and Body were come through y^e Back y^e cast skin retains y^e form of y^e first Insect."

In 1758 *Cicada tibicen* was described by Linné in *Systema Naturæ*, ed. X, p. 436. The description is not sufficiently in detail to identify the species, but Merian's figure on plate 49 already referred to is cited, and "Habitat in America" is added for locality.

In 1764 *Cicada tibicen* is more amply described by Linné in *Museum Ludovicæ Ulricæ Reginæ* p. 160, where he refers to Merian Surinam, pl. 49, and to Brown's Jamaica 436, pl. 43, fig. 15. He gives habitat as Surinam and Carolina.

So it was Linné himself who was responsible for the statement that *tibicen* also occurred in North America, as pointed out to me by Mr. W. E. China, of the British Museum, and not Stål as suggested by Smith and Grossbeck in *Entomological News*, April, 1907.

We may here state that no cicada is known to inhabit both Carolina and South America. The species that comes nearest to doing so is *Quesada gigas* Oliv., which does not get further north than Southern Texas.

In 1892, P. R. Uhler, in the Transactions Maryland Academy of Sciences, states: "The description of Linnaeus, Mus. Lud. Ulricæ, p. 160, embraces the characters of two or three species, one of which appears to be the *Cicada* [*Tettigonia*] *mannifera* Fab., but the figures of Merian, Brown and Seba cited in the same place, represent species very different from the true *C. tibicen*. More recently Dr. Stål has examined a type of our insect in the collection of Fabricius, and from him I have received a positive identification of our species." So while Dr. Stål is not to blame for the statement that the insect figured by Madame Merian is found both in Surinam and Carolina, he evidently mixed several species in his identification of *tibicen*.

In 1903, in Bulletin No. 107, p. 91, Kentucky Agricultural Experiment Station, Professor H. Garman wrote as follows: "I am using this name [*Cicada pruinosa*] as a convenience without feeling wholly satisfied that this is Say's insect. The Kentucky material does not agree well with his description. The name has of late been regarded as a synonym of *Cicada tibicen*, but with this I can not agree. Two good species are here described, what-

ever the proper names may be. In response to a letter of mine calling attention to differences between the two, Dr. L. O. Howard suggests that as Linné described *C. tibicen* from a drawing by Madame Merian of a Surinam insect it may prove that neither of our species is *C. tibicen*.''*

In 1907 Smith and Grossbeck in the April number of *Entomological News*, state in their "Studies in Certain Cicada Species," that "The conclusions drawn from this study of the literature are that *C. tibicen* L. is not a North American species at all but that based on Merian's figure, it is a common Central and South American species. . . . It seems strange that such large and common insects should have received so little careful attention. In most of the collections seen by us there were from two to five, and in one instance nine species under the name *tibicen*."

From the dates of the papers cited it will be seen that long ago *Cicada tibicen* was shown to be a South American insect, but nevertheless the name is still used in some recent papers on North American entomology, being applied to any one of several of our species that do not occur in Surinam, and which have scientific names of their own.

A comparison of the figure given by Merian with a collection of cicadas from Surinam and northern South America in general, shows that the species intended is much like what is known as *Fidicina mannifera* Fab. (1803), as pointed out by Uhler. It may be this, of which several of Walker's species are placed as synonyms by Distant, or it may be an allied species of which there are also several.

It has at times been proposed that *tibicen* Linn. be the type of the genus *Cicada* Linn. (See *Canadian Entomologist*, November, 1914, p. 388.) If this ruling prevails then we must look to *Fidicina mannifera* Fab., or one of its close allies, which will become a synonym of *tibicen* Linn., for the characters of the genus, and not to such species as *linnei*, *lyricen*, *chloromera* and

* The species figured by Professor Garman are what were later named, by Smith and Grossbeck *Cicada linnei* and *Cicada sayi*. This last should be known as *Tibicen chloromera* Walker, an earlier name.

pruinosa from North America that have so often been listed as synonyms of *tibicen*.

***Tibicen robinsoniana* Davis.**

In the summer of 1921 thirty-two specimens including the types of this species were collected at Wingina, Nelson County, Virginia, as recorded in this Journal for March, 1922. In the summer of 1922 Colonel Robinson heard the first *robinsoniana* singing near his museum on June 25, and later sent me three that he had shot. Under date of September 22, 1922, he wrote: "All summer long I could hear *T. robinsoniana* in every direction, also many other species. The cats were as busy as usual [at dusk] and I don't see how any emerging cicadas escaped them."

In 1923 the writer was again at Wingina and found cicadas very scarce compared with 1921. The following note was made at the time: "When I came to Wingina there were several *Tibicen robinsoniana* in the tall oaks near the brook that runs down by the spring on its way to the river. About every time we passed that way we heard these cicadas singing; generally there were two or three of them. On August 4 we went to the place and found two singing in adjoining oaks, and one across the brook in a third large oak. One of these I saw with a field glass, but just then a severe thunder storm came up and we were obliged to leave. As we repeatedly heard these cicadas over a period of about two weeks it proves pretty well that there were none during that time in the woods to the north of the museum, where they were so numerous in 1921, or they would have made themselves heard, and it also proves that generally they do not wander far; they stay pretty much in the same locality. On August 4, 1921, Colonel Robinson shot 10 male *robinsoniana*, but this year we have not heard that many in the two weeks, and we have found no pupæ skins of any kind of a cicada, though they also were very common in 1921. It is also evident from these facts that cicadas of the genus *Tibicen* take longer to develop than the two years assigned to them in some of the present manuals on entomology.

On his way north to West Point later in the season of 1923, Colonel Robinson found *robinsoniana* more numerous in the

valley of the Shenandoah. At New Market there were three *robinsoniana* "singing in the little garden of the house where we spent the night." On August 22, "many *robinsoniana* singing at Berryville and some in the outskirts of Harper's Ferry, where we crossed the Potomac. None thereafter."

In 1924 *robinsoniana* was more plentiful about Wingina than in 1923, but not as numerous as in 1921. *T. robinsoniana* is also known from Missouri, as recorded in this Journal for March, 1923.

***Tibicen marginalis* Walker.**

This species was originally described from Missouri by Thomas Say, under the preoccupied name of *marginata*. It has been recorded by the writer in this Journal from Florida, Mississippi, Texas, Missouri, Kentucky, Ohio, Kansas and Colorado. To these states may now be added Louisiana, Arkansas, Tennessee, Indiana, Illinois, Iowa, Nebraska and South Dakota, from which specimens have been examined. The species seems to be almost confined to the watershed of the Mississippi River and its tributaries.

While the pronotum is often entirely green or yellowish green in this species, there is a rather conspicuous color variety with an irregular oblong, black spot, centrally, extending backward to the collar. Black lines sometimes lead from this spot each side into the oblique grooves. This variety probably occurs throughout the range of the species, but is much more common near its northern limit. When freshly emerged this cicada may have a dorsal row of pruinose spots on the abdomen, as in *dorsata*, *dealbata* and *cultriformis*, but is easily separated from them by the more bent fore margin of the front wings, very broad head, form of the uncus, as well as by color characters.

***Tibicen cultriformis* Davis. (Pl. V, fig. 2.)**

Up to the present time five specimens of this cicada, the largest known from the far western states, have been recorded. (See this Journal, December, 1915, and March, 1921.)

Recently Mr. George P. Engelhardt secured for me four males and two females; also some pupa cases. They came from a trust

company in Phoenix, Arizona, but the specimens themselves bore no locality labels. Two males and one female are fresh specimens each with a well defined dorsal line of pruinose spots on the abdomen, and the sides broadly margined with pruinose. All bear the black spot of peculiar shape on the pronotum referred to in the original description.

***Tibicen chiricahua* Davis.**

During the summer of 1924 Mr. Douglas K. Duncan sent me seven specimens of this species stating that he had taken them on the morning of June 9th, 1924, about three miles from Fort Apache, Navajo County, Arizona, on a high mountain plateau about 6,000 or 6,500 feet, devoid of any vegetation except many clumps of a large heavy grass. "There is much timber around the edges of this plateau, pine, cedar and juniper, but nothing on the plateau but the clumps of grass. The cicadas made such a noise and there were so many thousands of them that the shrill whistle was very annoying, but they were very active and hard to catch. They were invariably found on the tips or a little back from the tips of this grass."

In the collection of the U. S. National Museum there is a male of this species from Silver City, New Mexico. From bush (C. V. Riley, collection).

***Tibicen parallela* Davis. (Pl. V, fig. 3.)**

This species was described and figured in this Journal for March, 1923. At that time only the male type from New Mexico was known. In October, 1923, Mr. O. C. Poling sent to me a male and female, collected in copulation on the 5th of September, near an oak tree, Baboquivari Mountains, Pima County, Arizona, and also a single male collected in an oak at the same place on October 8, 1923. The female is here figured. In 1924 he sent a female collected in the same mountains on August 22. More recently a male from Sabino Basin, Santa Catalina Mountains, Arizona, September 4 (C. H. T. Townsend), has been received for examination from the U. S. National Museum.

In this Journal for March, 1921, *Tibicen cinctifera* Uhler is identified and *Tibicen apache* Davis separated therefrom as a distinct species. At that time there were in the writer's collection six cicadas that were not referred to in the description of *apache*, for though allied to it, they differed in some respects from the 150 or more typical examples. In this Journal for December, 1917, four of the six specimens are mentioned as belonging to a variety of *cinctifera* with "the hind margin of the pronotum more narrowly banded with orange."

During the summer of 1924, Mr. O. C. Poling collected in the Baboquivari Mountains, Pima County, Arizona, 242 additional cicadas belonging to the above mentioned variety, and to what is here named as a species related to *apache* and *cinctifera*. Several of our eastern cicadas that show no greater differences are clearly distinct as proved by their songs and habits.

Tibicen semicincta new species. (Pl. V. fig. 4.)

Type male and allotype female, Baboquivari Mountains, Pima County, Arizona, June, 1924 (O. C. Poling), Davis collection.

Resembles *Tibicen apache* described and figured in this Journal for March, 1921, but differs as follows: Generally smaller and with the triangular opercula usually more pointed and drawn out at the extremity; much darker in color, hind margin of the pronotum or collar with the front part blackish, the posterior portion greenish or greenish orange; eighth abdominal segment more extensively pruinose; pubescence at base of abdomen silvery, in *apache* it is golden; eyes darker, not reddish or reddish-brown as in *apache*. Costal margin of the fore wing to end of radial cell greenish with the radial vein darker; in *apache* both veins are orange.

Measurements in Millimeters.

	Male Type	Female Allotype
Length of body	24	24
Width of head across eyes	9	10
Expanse of fore wings	68	74
Greatest width of fore wing	10.5	11
Length of operculum	7	

In addition to the type and allotype the following are in the writer's collection, all from Arizona: Baboquivari Mountains, Pima County, 2 females (F. H. Snow); Baboquivari Mountains, Brown's Canyon, July, 1923, male and 4 females (O. C. Poling);

Baboquivari Mountains, June, 1924, 87 males, 112 females; July, 1924, 19 males, 22 females (O. C. Poling); Bonita, July 16, 1917, male (Dr. H. H. Knight); Tucson, Sabin's Canyon, Santa Catalina Mountains, July 23, 1917, 3 males (Dr. H. H. Knight); Lewis Springs, Cochise County, June 18, 1918, male (Harrold Morrison); Cochise County, June 23, 1919, male (received from professor F. M. Gaige), and two males labeled "Arizona."

The specimens collected in 1924 were found by Mr. Poling at from 3,000 to 5,000 feet, often "resting on Ocotillo." This plant is also called Candlewood (*Fouquieria splendens*). Among those collected in July, there were 22 individuals, both males and females, that had just matured, and were still pale in color as well as soft.

The following table will serve to separate *cinctifera*, *apache* and *semicincta*.

Opercula with outer edges nearly parallel to each other; 8th segment and middle base of tergum pruinose. Expands 75 to 85 mm.

Texas, New Mexico *Tibicen cinctifera* Uhler.

Opercula with outer edges converging; without central pruinose spot at the base of the tergum.

Hind margin of pronotum or collar yellowish or straw-colored; eyes reddish and membranes at base of both pair of wings pale; often straw-colored. Pubescence at base of abdomen golden. Expands 70-75 mm.

Arizona, California, Utah *Tibicen apache* Davis.

Hind margin of pronotum or collar with anterior portion blackish and posterior portion pale. Eighth segment pruinose, and pubescence at base of abdomen, silvery. Eyes darker than in *apache* (not reddish in dried specimens), and membranes at base of all wings darker gray. Usually smaller than *apache* and with opercula more extended at tips. Expands 65-74 mm.

Southern Arizona *Tibicen semicincta* Davis.

***Cicada hieroglyphica* Say.**

In 1921 Prof. R. W. Harned of Agricultural College, Mississippi, sent me a great many cicadas for determination. Among

them were some interesting color varieties of *hieroglyphica*. Up to that time I had seen several hundred of the usual form from Long Island, N. Y., New Jersey, Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Arkansas, Kansas, Missouri and Tennessee, as well as the variety *johannis* from peninsula Florida in which the markings are much lighter in color and the irregular thoracic stripes reduced to spots.

Some of the specimens collected in Jones County, southern Mississippi, in 1920 and 1921 by Mr. Albert Breland belong to a variety having the head, pronotum and mesonotum almost wholly black, in fact in two specimens the mesonotum is entirely black except inconspicuous paler marks on the elevated \times . Mr. Breland wrote that he had taken the cicadas in oak and mulberry trees and some in a peach orchard.

An examination of a series of the closely allied *Cicada orni* L., kindly collected for me in Spain by Dr. M. D. Leonard in 1924, shows that in that species there is also a tendency to produce dark colored individuals.

Magiccicada, new genus.

According to Distant's Catalogue of Homoptera, Part I, Cicadidæ, 1907, p. 125, and Van Duzee's Catalogue of Hemiptera, our native Seventeen-Year Cicada belongs to the Genus *Tibicina*. *Cicada hæmatodes* Scopoli of Europe was placed in the genus *Tibicina* by Amyot, Ann. Soc. Ent. France, 1847, p. 154, and by Kolenati in 1857 (See Van Duzee's Catalogue of Hemiptera). Distant designated it the type of the genus in 1905, Ann. Mag. Nat. Hist., Series 7, XVI, p. 22.

An examination of *Tibicina hæmatodes* shows that it is correctly placed next to our North American species of *Okanagana* in the Distant catalogue. The uncus is exposed and can not be withdrawn into the abdomen, the tympana are wholly uncovered and the form and coloring are as found in many species of *Okanagana*. *Tibicina hæmatodes* has, however, proportionately broader wings and a more robust body than is usual in *Okanagana*.

An examination of the Seventeen-Year Cicada shows that it is not closely related to *hæmatodes* and should not be in the same genus with it. The uncus, as described and figured by Dr. Paul B. Lawson, Kans. Univ. Sci. Bulletin, Vol. XII, 1920, when viewed laterally, has the form of a triangle with its apex bent strongly cephalad. "Viewed caudally it has the form of two sclerites extending downward from the anal tube, encircling the penis, and widening below it into two triangular processes which taper to acute apices" or hooks. It can be withdrawn into the abdomen which is long, almost parallel sided, and not tapering as in *hæmatodes*. The first cross vein of the fore wing starts near the base of the first marginal cell, instead of near its center, and the second cross vein is quite close to the first, instead of being more than its length away as in *hæmatodes*. The wing venation in some respects resembles more closely that of *Sena* (*Cicadatra*) *quærule* Pallas, but in that insect the tympana are partly covered. See Monograph Oriental Cicadidæ, Distant, Tab. XII, Fig. 2.

Fabricius placed *septendecim* in the genus *Tettigonia*, but that name is used in *Orthoptera*, and *Tettigonia verrucivora* Linn. of Europe and Asia, is given as the type in Kirby's catalogue, 1906, p. 212.

Tibicen Latreille has also been used by some authors for *septendecim*, commencing with Stål, 1861, but Mr. Van Duzee shows in the Canadian Entomologist, November, 1914, p. 387, that Latreille used the name for *plebeja* in 1825.

It is evident from the foregoing that our well known red-eyed Seventeen-Year Cicada does not belong where it has been placed, in fact Distant states in his 1905 paper, already cited, in describing his Division *Tibicinaria*, that *Tibicina septendecim* "possesses several aberrant characters." The writer therefore proposes that this important and interesting species be the type of a new genus and be called *Magiccada septendecim* (Linn.).

Magiccada cassinii Fisher.

In the collection of the Iowa State College of Agriculture and Mechanic Arts, there is a female *M. cassinii* Fisher dated Ames, Iowa, October 11, 1912.

In this journal for December, 1919, the writer recorded another *cassinii* collected October 15, 1919, by Miss Mary E. Dewey, of Luray, Clark County, Missouri. Attention had been called to the insect by hearing it sing.

Magicicada septendecim and *M. cassinii*, that normally appear in May and June, are usually dead by mid-summer, and a sad blemish in entomological literature may be found in the acrimonious discussion between the botanist Prof. Lester F. Ward, who stated that he had heard a 17-year cicada singing on October 12, 1884, near Clifton Station, Virginia, and Dr. C. V. Riley who thought, owing to the lateness of the date, that it was likely some other species of cicada. However, in reading the controversy published in *Science*, June 12 and July 3, 1885, and the *Scientific American Supplement*, August 15, 1885, we find that both gentlemen were incorrect in some particulars as we think we see the truth to-day.

We may here add that the song of *cassinii* does not at all resemble that of *septendecim*, but is "more like that of some of the grasshoppers" as stated by Dr. G. C. Fisher. Some of the differences between *cassinii* and *septendecim* were pointed out by Dr. Hildreth in *Silliman's Journal* as early as 1830, and by Dr. Fisher and John Cassin in *Proc. Acad. Natural Sciences of Philadelphia*, September, 1851. In some of the 17-year broods the eyes in the small form are certainly much more prominent than in *septendecim*.

Okanagana bella has a wide distribution extending from western Kansas and South Dakota to British Columbia and the states of the Pacific coast. In the original description of the species in this *Journal*, 1919, p. 199, is the statement "Valve black, sometimes orange at the sides along the upper margin. In some of the specimens from Colorado the valve is entirely orange." Since 1919 a considerable number of males with light colored valves have been examined. Records of 47 individuals have been made and a considerable number are also in the writer's collection from Laremer, Jefferson, Douglas, El Paso and Summit Counties, Colorado. These localities, with the exception of Summit County which is in the mountains, are east of the continen-

tal divide. From the last mentioned county one male with a black valve is at hand, in the others the valve is reddish. Typical *Okanagana bella* may, however, occur east of the divide, and we have specimens from South Dakota that are like those from British Columbia. For some reason those from the above mentioned counties in Colorado, the first four in particular, differ from the usual and seem to be worthy of a variety name.

***Okanagana bella* var. *rubrocaudata*, new variety.**

Type male and allotype female, both from Plainview, Jefferson County, Colorado. The male was collected in July, 1922, by Mr. George P. Engelhardt, and the female, June 23, 1922, by Mr. Oslar. Davis collection.

Valve at the extremity of the abdomen in the male is deep orange or reddish in color instead of black, the last ventral segment is almost entirely reddish, the black being reduced to a narrow band at base and the remaining segments also have the black much reduced. The 8th and 9th dorsal segments are conspicuously margined with reddish, instead of the red being reduced to a line. In the female the 8th dorsal segment is more broadly margined with reddish, and beneath, the last segments are also more reddish in color.

***Okanagana lurida* Davis.**

A second example of this species has been discovered in the collection of the U. S. National Museum. It is a male collected at Pulman, Washington, by C. V. Piper, as was the type, with which it closely agrees.

***Okanagana nigriviridis* Davis.**

This beautiful green and black cicada was described in this Journal for March, 1921, p. 9, from four specimens collected at Upland, San Bernardino Co., California, in July, 1920, by Miss Esther P. Hewlett.

Mr. George H. Field has since sent to me a female collected at Warner's, San Diego Co., Calif., in June, 1922, early one morning as he climbed a mountain road. It had just emerged from its pupa case which was lying beside it.

***Okanagana viridis* Davis.**

This almost entirely green insect, and the only member of its genus so far reported from the southeastern United States, was

described in this Journal for Sept.-Dec., 1918, p. 153, from a male and female collected at O'Reilly, Mississippi, in the bottom land along the Mississippi River.

On August 9, 1921, Prof. R. W. Harned, Agricultural College, Mississippi, very kindly sent me a male *viridis* and wrote as follows: "On August 4th Mr. A. E. Terry, one of my former students, who lives about ten miles from here, brought to the office a male of *Okanagana viridis* that he had collected the previous day. He had placed the specimen in a small tin box. It was still alive when he brought it to us, and I placed it in a breeding cage where it remained alive for several days. I did this so as to give the insect a chance to change its coloring if it was going to do so.

"The next day after the specimen was brought to me, Mr. Kimball and I went out to Mr. Terry's farm to see if we could not find some more specimens of this interesting cicada. He took us to the woods where he had found the specimen, and went right to the small shrub from which he had collected it. The plant was a small hawthorne not more than ten inches high. On the ground beside this plant, I found the pupa skin from which the specimen had probably emerged. Within a radius of five yards from the spot where this cicada had been collected we were able to find 20 cast skins of what is apparently the same species. I am mailing ten of these to you.

"The cicada and the cast skins were collected under an old black jack oak tree. This was in an old woods that I am certain has never been cleared. The large trees in this woods are mostly black jack and post oaks. The particular tree under which we found these specimens is only a few yards from an open field that has probably been farmed for many years. We could not find any cast skins under other trees in this woods, although we searched faithfully for several hundred yards from this tree in three directions. We did not search in the open pasture to the west. This woods is on comparatively high land. It is located about four miles south of Sessums, Mississippi, and about ten miles from the college.

"This specimen was something of a surprise to me as I had not been expecting to get this species from this section of the state."

On July 1, 1923, Miss Louise Knobel collected a male *viridis* on a boneset growing in a wood at Hope, Arkansas, and in her letter stated that the specimen was "hard and dry when captured."

On July 11, 1923, Mr. W. J. Clench collected a female *viridis* at Memphis, Tenn. The specimen has been examined by the writer, and is in the Museum of Zoology, University of Michigan, at Ann Arbor.

While the five specimens here mentioned have come from three adjoining states, the actual area of distribution of the species thus recorded is really not very great.

***Clidophleps vagans*, new species. (Pl. V, fig. 5.)**

Type male, southern part of California, 1922 (From Victor Duran). Deposited in the American Museum of Natural History.

Head as broad as the front margin of the pronotum; front produced but not as broadly triangularly so as in *Clidophleps astigma*; it is nearer in form to that of *C. distanti*. Median sulcus of the front well defined. Pronotum with the humeral angles rounded; the anterior angles more broadly rounded than in *astigma*. In *distanti* the anterior angles are more pronounced. The opercula with the extremities rounded. Last ventral segment somewhat truncate at extremity. Uncus when viewed in profile bent downward at extremity and deeply sinuate on the lower surface of the apical half; about as long as the valve. In *astigma* and *distanti* it is shorter than the valve. Basal cell of the fore wings clear; of the same shape as in *astigma*. Costa of the fore wings yellowish to the end of the radial cell, brownish beyond; membranes of both pair of wings yellowish. The fore wings are proportionately narrower than in *distanti*, the costal margins are more evenly curved, the central portions are not so much bulged outward, or upward when the wings are expanded, and the "triangular fuscus nodus" at the outer end of the cubital cell is reduced to a mere thickened vein. The fore wing is of the same narrow type as in *astigma*, but the radial area is proportionately narrower.

General body color yellowish variegated with black. Front of head black, with an interrupted and broken black band between the eyes. Beneath, the head is black margined with yellow on each side of the transverse rugæ; the median sulcus is centrally black, yellowish at extremities. Pronotum yellowish with the following black: centrally with two nearly parallel lines broadest at the anterior extremities, each side of which

are three short broken lines the outer one expanding on the fore part of the collar each side into a rather conspicuous spot. Mesonotum yellowish with four obconical, lacerated black spots extending backward from the anterior margin; the central pair shortest with a wedge-shaped spot behind them. Two black dots near the extremities of the anterior arms of the yellowish mesothoracic cross. Metanotum pale with a curved black mark near the base of each wing. Dorsum of the abdomen yellowish, each segment with the basal part black; densely covered with silvery hairs especially at the base of each segment. The uncus and valve are pale, also the under-side of the abdomen. The legs are pale striped and spotted with brown.

Measurements in Millimeters.

	Male Type
Length of body.....	23.5
Width of head across eyes.....	6.5
Expanse of fore wings.....	57
Greatest width of fore wing.....	10
Length of valve.....	4

In his letter of November 12, 1922, Mr. Victor Duran states: "The light colored specimen was found by my brother-in-law in his machine after having driven from Mammoth to Los Angeles. I presume it came in somewhere in the Owen's Valley."

This species is nearest to *astigma* but may be separated by its larger size, shape of the front of the head; the radial cell, and the valve. It further differs in color pattern as described.

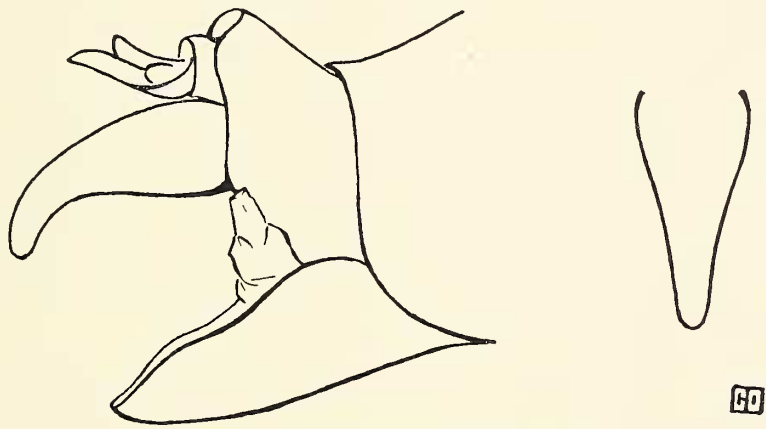


FIG. 1. *Clidophleps vagans*

Melampsalta cameroni Davis.

Described in this Journal for June, 1920, from two males and a female from Brownsville, Cameron Co., Texas. Lately Mr. F. F. Bibby has sent me a male from La Feria, Cameron Co., Texas, May 2, 1924. This specimen has five marginal areas in

the right hind wing and four in the left. The right fore wing has eight marginal areas, and the left but seven.

Pink Cicada Mutants.

In 1923 Dr. Raymond H. Beamer, University of Kansas, kindly sent to me for examination 315 specimens of the two species of *Melampsalta* found in Kansas. They were collected mostly in Kiowa and Ellsworth Counties. Of these 292 were *calliope* Walker (*parvula* Say), and 23 *kansa* Davis. All of the specimens of *kansa* were green in color, but among the *calliope* were two pink females as follows: Kiowa Co., Kans., July 6, 1923, (C. H. Martin), and Ellsworth Co., Kans., July 12, 1923, (C. H. Martin). Mr. Warren Knaus was also on this collecting trip to Kiowa Co., and he sent to me a pink female *calliope* collected July 6, 1923. The remaining specimens of *calliope* collected on this expedition were either straw-colored or straw-colored slightly tinged with green.

In Florida *calliope* is usually all green or greenish in color and of slender proportions. Of this form (var. *floridensis* Davis) Prof. Frederick M. Gaige, Ann Arbor, Michigan, has kindly sent to me for examination the following pink mutants: Alachua Co., Fla., Aug. 5, 1923, male (Alexander—Walker) and Enterprise, Volusia Co., Fla., female (F. Walker).

In 1924 Dr. Harry H. Knight sent to me for examination 89 specimens of *Pacarina puella* Davis (*signifera* Walker, name preoccupied), collected in Eastland Co., Texas, during the month of May, 1921, by Miss Grace O. Wiley. A considerable number of the specimens were taken at light. For the most part they were of the usual color, but several of them were somewhat pink, especially the under parts and the basal membranes of both pairs of wings.

It is of course not unusual to find pink individuals among a number of species of Homoptera, especially where the usual color is green or straw-color as it is in the cicadas here mentioned.

Vespa Crabro as a Cicada Killer.

On September 18, 1924, at Rye, N. Y., Mr. Henry Bird saw the large naturalized wasp *Vespa crabro* capture in mid air a

cicada. The insects struggled for a moment and then both came to the ground together. Mr. Bird has kindly presented them to me, and I find the cicada to be a female *Tibicen lyricen* De Geer.

This is the second instance that has come under the writer's notice of this large wasp attacking a cicada. The first case was mentioned in connection with other cicada killing insects in this Journal for June, 1924. It occurred at Arrochar, Staten Island, September 10, 1916, when Prof. Wm. S. Wright, Edw. J. Burns and I witnessed a living *Tibicen chloromera* (*sayi*) being devoured by a *crabro*. We had, however, no proof at the time that the cicada had been captured by the wasp, but it now seems likely that it actually was. *Vespa crabro* catches cicadas to eat, whereas the considerably larger *Sphecius speciosus* collects them as food for its young, and often stores away a considerable number in a single burrow.

EXPLANATION OF PLATE V

- Fig. 1. *Cicada tibicen* Linn. Surinam, S. Am.
- Fig. 2. *Tibicen cultiformis*. Arizona.
- Fig. 3. *Tibicen parallela*. Arizona.
- Fig. 4. *Tibicen semicincta*. Type. Arizona.
- Fig. 5. *Clidophleps vagans*. Type. California.